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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,720	11/12/2003	Steve Montellese		7238

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EXAMINER	
HOLTON, STEVEN E	
ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/706,720	MONTELLESE, STEVE	
	Examiner	Art Unit	
	Steven E. Holton	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 12/18/2006. Claims 1-9 are currently pending in the application. An action follows below:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Plesniak et al. (USPN: 6211848), hereinafter Plesniak.

Regarding claim 6, Plesniak discloses a user input device using a holographic image. The user input device operates by producing a holographic image (Fig. 1, element 110), detecting the movement and location of an interaction by the user, determining a response to the action and generating a new holographic image in response to the user input (col. 4, lines 35-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnon (USPN: 6650318) in view of Tomasi et al. (USPN: 6710770), hereinafter Tomasi and in further view of Plesniak.

Regarding claim 1, Arnon discloses an input detection system comprising a system for projecting a holographic image onto an area (Fig. 2, element 65), a reception device that registers the imaged area and responds to the wavelength of light of the projected interface (Fig. 1, element 40; col. 6, lines 45-46).

However, Arnon does not discuss the method of using a camera (CCD) to determine the location of an input from the user. The use of a CCD as a sensor is all that is provided by Arnon.

Tomasi discloses an optical input system for a virtual keyboard. Tomasi describes using a camera to measure the background of the system and then subtract the background from the real input image to determine the input image for finding the location (col. 9, lines 31 - 50). That is the computer is configured to measure the image generation pattern and background information (Tomasi, col. 9, lines 35-37) and then calculate the difference with the received image (col. 9, lines 46-50) so that corrected received image is then used to determine the location of the object in the sensing area.

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Tomasi and Arnon. Using a holographic keyboard as described by Arnon with a subtraction method as described to Tomasi. The motivation for doing so would have been "to improve the signal/noise ratio (Tomasi, col. 9, line 32)" for easier detection of the indicated location.

However, neither Arnon nor Tomasi expressly disclose producing a modified holographic image based on the input from a user of the input device. Arnon discloses altering a light beam projection system based on user input. Arnon further discloses that a holographic projection system could be used in place of the beam scanning projection system, but does not discuss techniques for producing an altered holographic image in response to user input.

Plesniak discloses an input system using a projected holographic image that alters the holographic image based on user interaction with the hologram. The input device of Plesniak discloses using a spatial light modulator to alter the projected hologram based on computer calculations (col. 6, lines 40-51).

At the time of invention it would have been obvious to one skilled in the art to modify the teachings of Arnon and Tomasi with the teachings of Plesniak. The changeable holographic projection system of Plesniak could be used as the holographic projection system as suggested by Arnon. The motivation for doing so would be to provide a holographic projection system that could include the changeable ability of the light beam display taught by Arnon. By using the changeable holographic system of Plesniak as the projection system, changeable keyboard layouts and other alterable

input as described by Arnon (Figs. 6 and 7, col. 7, line 59 – col. 8. line 10) could be implemented with a changing holographic keyboard rather than a light beam displayed keyboard. Thus, it would have been obvious to combine the teachings of Arnon, Tomasi and Plesniak to produce the device as described in claim 1.

Regarding claim 2, the Examiner takes Official Notice that it is well-known in the art that reflective or transmissive imaging devices can be used to produce a holographic image. Such devices could include reflective and transmissive Liquid Crystal Displays or other optical arrangements to alter the light projection of the display device.

Regarding claim 3, Tomasi describes using a digital camera (abstract), which is a solid state sensing device. Also, Arnon mentions using a CCD which is a type of solid state sensing device (col. 3, lines 5-7).

Regarding claim 4, Arnon discloses the image representing a keyboard (Fig. 6) and also as a game (Fig. 17).

Regarding claim 5, the Examiner notes that this method is closely related to the device described in claim 1. Therefore the arguments made regarding claim 1 can be used where applicable to claim 5. Arnon further describes triggering a function based on the position of the object within the input area (abstract, lines 7-8). Wherein, depending on the location of the object in the sensing area a different operation or function is performed. That allows the hologram-based keyboard to function as a keyboard device.

4. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnon in view of Plesniak.

Regarding claim 6, Arnon discloses presenting a user interface from a template (Fig. 6, element 80 is a user interface from a standard template), detecting the movement and location of a user interaction, determining an appropriate response to the action, and regenerating the image of the template to accommodate the function. Fig. 7 shows a different template of keys and Arnon discusses changing between first and second sets of keys by typed commands in col. 8, lines 17-26. Arnon does disclose the ability of using a holographic display template (col. 7, lines 13-15), but does not expressly disclose the alterable display output using the holographic system. The described changing display of Arnon focuses on using a beam emitting system.

Plesniak discloses an input system using a projected holographic image that alters the holographic image based on user interaction with the hologram. The input device of Plesniak discloses using a spatial light modulator to alter the projected hologram based on computer calculations (col. 6, lines 40-51).

At the time of invention it would have been obvious to one skilled in the art to modify the teachings of Arnon with the teachings of Plesniak. The changeable holographic projection system of Plesniak could be used as the holographic projection system as suggested by Arnon. The motivation for doing so would be to provide a holographic projection system that could include the changeable ability of the light beam display taught by Arnon. By using the changeable holographic system of Plesniak as the projection system, changeable keyboard layouts and other alterable input as

described by Arnon (Figs. 6 and 7, col. 7, line 59 – col. 8. line 10) could be implemented with a changing holographic keyboard rather than a light beam displayed keyboard. Thus, it would have been obvious to combine the teachings of Arnon and Plesniak to produce the device as described in claim 6.

Regarding claim 7, Arnon discloses using his input system to provide a mouse functionality (Fig. 3b, col. 6, lines 21-28).

Regarding claim 8, Arnon discloses using a users hand to interact with the interface (Figs. 13 and 14, col. 10, lines 7-19).

Regarding claim 9, the limitations of this claim include using a finger such as in claim 8 and redrawing the image to provide feedback regarding success. The changing of the keyboard from one template to another as in claim 6 provides feedback if the user successfully typed in the correct sequence to change to a new layout or not.

Response to Arguments

5. Applicant's arguments, see pages 8 and 9, filed 12/18/06, with respect to the rejection(s) of claim(s) 1-9 under 35 USC 102 and 103 have been fully considered and are persuasive in view of the amendments made to the claims. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found and applied art.

As stated in the above rejections, the Examiner agrees that Arnon merely discloses using a holographic projection system, but does not discuss making the holographic projection system to produce multiple displays based on user input. The

newly applied Plesniak reference shows that a modifiable holographic image would be available at the time of invention and that such a modifiable holographic projection system could be used as the holographic projection system for Arnon. This would produce a holographic keyboard responsive to user input as described in the amended independent claims.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven E. Holton
Division 2629
March 18, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER